

WHAT IS CLAIMED IS:

1. A connecting structure for exhaust pipes, comprising:

a plurality of upstream exhaust pipes including downstream-end portions having peripheries;

5 a first connecting flange connected to the peripheries of the downstream-end portions of said upstream exhaust pipes;

a plurality of downstream exhaust pipes arranged so as respectively to correspond to said upstream exhaust pipes, said plurality of downstream exhaust pipes including upstream-end portion having peripheries;

10 a second connecting flange connected to the peripheries of the upstream-end portions of said downstream exhaust pipes; and

a plurality of spherical joints located between said first connecting flange and said second connecting flange for airtightly connecting said downstream end portions of said upstream exhaust pipes with said upstream end portions of said corresponding
15 downstream exhaust pipes, respectively, each of said spherical joints comprising:

an annular seal unit with a central opening for passage of exhaust gas, a spherical portion on one side of said annular seal unit, and a flat surface on the other side of said annular seal unit, said annular seal unit being held between said first and second connecting flanges;

20 a spherical bearing surface formed on one of said first and second connecting flanges in such a manner as to be brought into slidable spherical contact with the spherical portion formed on one side of said annular seal units, wherein said spherical bearing surface surrounds said central opening; and

25 a flat bearing surface formed on the other one of said first and second

connecting flanges, wherein said flat bearing surface is disposed so as to confront said annular seal unit such that said flat bearing surface contacts and is slidable with respect to the flat surface of said annular seal unit in a direction oblique to longitudinal axes of the exhaust pipes connected to said other one of said first and second connecting flanges.

2. A connecting structure for exhaust pipes as set forth in Claim 1, wherein for each spherical joint, an annular extended portion is integrally formed on one of said upstream exhaust pipes, said downstream exhaust pipes, said first connecting flange, and said second connecting flange, said annular extended portion being disposed in said central opening, and

wherein a diametrical gap is formed between an outer peripheral surface of said extended portion and an inner circumferential surface of said central opening, said diametrical gap permitting the sliding movement of said annular seal unit.

3. A connecting structure for exhaust pipes as set forth in Claim 1, wherein each of said spherical joints further includes:

a cylindrical heat shielding member fitted in and secured to an inner circumferential surface of said central opening of said annular seal unit, and

a space adjacent to an inner circumferential side of said heat shielding member, wherein said space permits the sliding movement of the annular seal unit.

4. A connecting structure for exhaust pipes as set forth in Claim 1, wherein said first connecting flange extends around each one of said plurality of parallel upstream exhaust pipes, and is formed of a single unit.

5. A connecting structure for exhaust pipes as set forth in Claim 1, wherein said second connecting flange extends around each one of said plurality of parallel downstream exhaust pipes, and is formed of a single unit.

6. A connecting structure for exhaust pipes as set forth in Claim 1, wherein said plurality of upstream exhaust pipes are parallel to one another.

7. A connecting structure for exhaust pipes as set forth in Claim 1, wherein said plurality of downstream exhaust pipes are parallel to one another.

8. A connecting structure for exhaust pipes as set forth in Claim 1, wherein said flat bearing surface is disposed so as to confront said annular seal unit such that said flat bearing surface contacts and is slidable with respect to the flat surface of said annular seal unit in a direction substantially perpendicular to the longitudinal axes of the exhaust pipes connected to said other one of said first and second connecting flanges.